

Addendum

# HP StorageWorks HSG80 Addendum for ACS Solution Software V8.8

## Differences Between HSG60 and HSG80 Array Controllers

**Product Version:** 8.8-1

First Edition (March 2005)

**Part Number:** AV-RV2MA-TE

This document describes the differences between HSG60 and HSG80 array controllers. For the latest version of this Addendum and other product documentation, visit the StorageWorks web site at <http://www.compaq.com/storage/index.html>

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**HSG80 Addendum for ACS Solution Software V8.8—Differences Between  
HSG60 and HSG80 Array Controllers**

**First Edition (March 2005)**

**Part Number: AV-RV2MA-TE**

## Taking Advantage of the Full Set of HSG80 Documentation

The standard HSG80 ACS Solution Software V8.8-1 documentation set is provided to HSG60 customers because it is the most complete set of information on the HSG product line.

Only upgrade customers are targeted for the ACS V8.8-1 delivery. The impact on customers is considered minimal since existing HSG60 customers are already familiar with their HSG60 equipment.

In this way, HSG60 customers receive the most complete set of information, including this document, which describes the specific differences between HSG60 and HSG80 array controllers.

## Specific Differences Between HSG60 and HSG80

The following topics detail the specific differences between HSG60 and HSG80 array controllers:

- [Specific Differences](#), page 7
- [Layered Software Applications](#), page 7
- [Saving HSG60 Configurations to Previously Initialized StorageSets](#), page 8
- [SWCC Client Installation](#), page 8
- [SCSI Bus Limitation](#), page 8
- [HSG60 Limitation](#), page 9
- [Rolling Upgrade Limitation, HSG60 and IBM AIX](#), page 9
- [Rolling Upgrade Limitation, HSG60 and HP-UX](#), page 9
- [HSG60 Supported Disk Drives](#), page 10

## Related Documentation

- ACS V8.8-1 controller documentation (software delivered via PCMCIA cards)
- *HP StorageWorks HSG60 and HSG80 Array Controller and Array Controller Software Command Line Interface Reference Guide*, EK-G80CL-RA. C01
- *HP StorageWorks HSG60 and HSG80 Array Controller and Array Controller Software Maintenance and Service Guide*, EK-G80MS-SA. C01

- *HP StorageWorks HSG60 and HSG80 Array Controller and Array Controller Software Troubleshooting Guide*, EK-G80TS-SA. C01
- SWCC v2.5 documentation (Client software delivered in solutions kits)
- *HP StorageWorks HP StorageWorks Command Console Version 2.5 User Guide*, AA-RV1UA -TE
- *HP StorageWorks HP StorageWorks Command Console Version 2.5 Release Notes*, AV-RV1TA -TE
- *HP StorageWorks Command Console V2.5 Online Help*, AA-RS20A-TE and AA-RS21A-TE
- Host-specific documentation (SWCC Agent and HBA software delivered in solutions kits)
- *Installation and Configuration Guide* (platform-specific)
- *HP StorageWorks HSG80 ACS Solution Software Release Notes* (platform-specific)
- *HP StorageWorks Enterprise/Modular Storage RAID Array Fibre Channel Arbitrated Loop Configurations for Windows, Tru64, and Sun Solaris Application Note* (AA-RS1ZB-TE)—Solution software host support includes the following platforms:
  - IBM AIX
  - HP-UX
  - Linux (Red Hat x86/Alpha, SuSE x86/Alpha, Caldera x86)
  - Novell NetWare
  - Open VMS
  - Sun Solaris
  - Tru64 UNIX
  - Windows NT/2000

Additional support required by HSG80 ACS Solution Software V8.8-1, but delivered through external programs, includes the following:

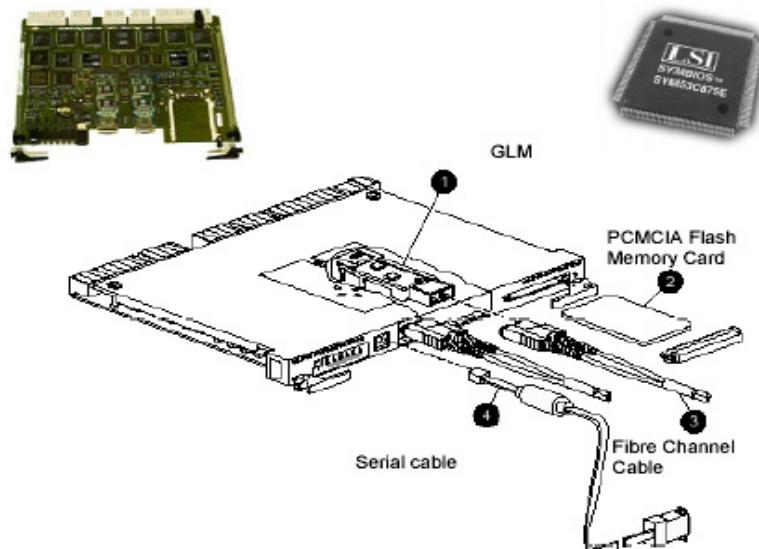
- Heterogeneous *rules-based* SAN configurations
- Host-Bus Adapter (HBA) products
- Applicable Storage Utility Management Suite (SUMS) components
- Vendor-specific switch products

- Secure Path Products (Windows, NetWare, Sun, AIX, HP-UX)
- Data Replication Manager (DRM) under ACS 8.8-1P
- Enterprise Volume Manager (EVM) under ACS 8.8-1S
- Enterprise Backup Solution (EBS)
- Additional ACS Variants (W, R)

## Quick Review of HSG60 and HSG80 Array Controllers

The HSG60 and HSG80 Fibre Channel array controllers (see [Figure 1](#)) are intelligent mass storage controllers that interface between host computer systems using a Fibre Channel bus, Ultra Wide attached mass storage devices, and Ultra Wide Single Ended SCSI buses. They are used in the MA8000 and EMA12000 Fibre Channel storage systems.

The solution kit, consisting of hardware, software and firmware, for the HSG60 or HSG80 array controller, also contains the latest version of StorageWorks Command Console (SWCC) software.



**Figure 1: HSG array controller**

Features of the HSG60 and HSG80 Array Controller include:

- Channel transfer rate up to 100 MB/s for each path
- Up to over 24,000 I/Os per second per controller pair
- Protocol and drive support, Ultra3 and Ultra2 SCSI (the maximum number of disks varies by storage system configuration)
- RAID levels 0, 1, 0+1, 3/5, and JBOD
- 256 MB memory cache (upgradeable to 512MB) with battery backup
- CLI (Command Line Interface) built into firmware

## Array Controller Software

Array Controller Software (ACS) is firmware used on the HSG60 and HSG80 array controllers. ACS resides on the controller through a PCMCIA card and requires a specific solution kit for each operating system.

Features of the Array Controller Software, used with HSG60 and HSG80 controllers, include:

- Up to 146GB drives in a 1-inch form factor
- An increased number of maximum supported host connections from 64 to 96
- 14 drives on a single SCSI bus
- 84 total drives behind one controller pair with six fully loaded shelves of 14 drives each
- RAID storage set size of up to 1.024 TB

# Specific Differences

## Using CLI Commands With HSG80 and HSG60 Controllers

On a HSG60 array controller system, the CLI appears as follows:

```
HSG60 >
```

The following HSG80 CLI commands do not work with HSG60 controllers.

- ADD\_REMOTE\_COPY\_SETS
- DELETE\_ASSOCIATIONS
- DELETE\_REMOTE\_COPY\_SET\_NAME
- SET\_ASSOCIATIONS
- SET\_DRM
- SET\_REMOTE\_COPY\_SET\_NAME
- SET\_SITE\_FAILOVER

All other CLI commands described in the *HP StorageWorks HSG60 and HSG80 Array Controller and Array Controller Software Command Line Interface Reference Guide* work with either HSG80 or HSG60 array controllers.

## Layered Software Applications

Compatibility among HSG60 controllers and StorageWorks-layered software applications is defined in [Table 1](#).

**Table 1: Layered Application Compatibility**

Application	Version	Supported ACS Variants
Command Scripter <sup>1</sup>	V1.0B	V8.8L
Network View <sup>2</sup>	V2.0B	V8.8L
Management Appliance	V1.0C	V8.8L

1. This application is supported by IBM AIX, HP-UX, OpenVMS, Sun Solaris, Tru64 UNIX, and Windows.
2. This application is supported by IBM AIX, Novell Netware, OpenVMS, Sun Solaris, Tru64 UNIX, and Windows.

For more information on these and other Storage Management software, see the product documentation that comes with the product, or visit the following HP website:

[http://www.hp.com/storage/software\\_index.html](http://www.hp.com/storage/software_index.html)

## Saving HSG60 Configurations to Previously Initialized Storagesets

If any storageset within the configuration was previously initialized with the *INITIALIZE container-name SAVE\_CONFIGURATION* command to save your configuration to disk, it will not be necessary to reconfigure your devices with a new HSG60 controller. *SAVE\_CONFIGURATION* also retains code patch information to the software. This option is supported on single controller configurations only.

ACS V8.8 saves any installed software patches on disks initialized with the *SAVE\_CONFIGURATION* option. To replace a controller and restore the configuration from a disk, you will not have to reinstall any software patches.

Configuration information cannot be retrieved from storagesets created on other HSx controllers (for example, HSD, HSJ, or HSZ controllers). You can only restore a configuration from a configuration saved on HSG60 array controllers.

## SWCC Client Installation

SWCC employs different applets for different controllers. The SWCC client installation will differ between HSG60 and HSG80. The SWCC Agent and HBA drivers are identical for HSG60 and HSG80 array controllers.

## SCSI Bus Limitation

The array controller firmware can address up to 14 disks per SCSI bus.

- Since the HSG60 array controller has two SCSI buses, the maximum number of disks supported is 28. The SCSI-2 bus can not be configured split-bus.

- Since the HSG80 array controller has six SCSI buses, the maximum number of disks supported is 84.

## **HSG60 Limitation**

The predefined HSG60 model provides a set number of controller shelves and drive shelves in a Modular Storage Cabinet and is limited to:

- MA6000: One Model 2200 controller enclosure and three dual-bus Model 4354 disk enclosures in a 22U Modular Storage Cabinet

## **Rolling Upgrade Limitation, HSG60 and IBM AIX**

For HSG60 controller configurations, rolling upgrades are not supported on IBM AIX with this release. The shutdown method is required to perform an ACS upgrade from ACS V8.6 to V8.8 on IBM AIX systems.

## **Rolling Upgrade Limitation, HSG60 and HP-UX**

For HSG60 controller configurations, HP-UX does not support rolling upgrades. HP-UX in a HSG60 controller configuration is limited to SCSI-2 only and loop only.

## **HSG60 Supported Disk Drives**

Patches for ACS and a link to the supported disk drives for the HSG60 are located at <http://h18006.www1.hp.com/products/storageworks/softwaredrivers/acs/>.